

WHAT IS CLAIMED IS:

1. A recording medium on which digital data has been recorded in synchronism with pre-recorded address data

characterized in that

at least a portion of said address data has been recorded on conversion on the basis of a pre-set conversion rule.

2. The recording medium according to claim 1

wherein

the information indicating an area where there is recorded the address data converted in accordance with said pre-set conversion rule is recorded on the medium.

3. The recording medium according to claim 1

wherein

said pre-set conversion rule is to record said address data in the decrementing order.

4. The recording medium according to claim 1

wherein

said pre-set conversion rule is that, if the entire address data to be converted among the pre-recorded address data are expressed with the same number of bits, the information of bits corresponding to the same bits of the address data to be converted is rewritten and recorded.

5. The recording medium according to claim 1

wherein

said pre-set conversion rule is to record said address data on conversion by the pre-set key information.

6. The recording medium according to claim 5

wherein

said pre-set key information has been recorded on the medium.

7. The recording medium according to claim 1

wherein

in an area of the medium in which has been recorded the address data converted in accordance with said pre-set conversion rule, at least one or more of the control information necessary for reproducing said digital data, copyright information and the information for decrypting the encrypted digital data is recorded.

8. The recording medium according to claim 1

wherein

said address data is pre-recorded as pre-pits on said medium.

9. The recording medium according to claim 1

wherein

said address data is pre-recorded embossed marks on said medium.

10. The recording medium according to claim 1

wherein

said address data is pre-recorded by wobbling a groove.

11. The recording medium according to claim 1

wherein

said digital data is recorded on the medium on 8-16 modulation and encoding by a product code.

12. An apparatus for preparing a master disc of a recording medium on which digital data is recorded in synchronism with pre-recorded address data, said apparatus comprising:

pre-format signal generating means for generating pre-format signals pre-recorded on said recording medium, said pre-format signals containing said address data; and

recording means for recording said pre-format signals from said pre-format signal generating means on the master disc;

said pre-format signal generating means converting at least a portion of said address data in accordance with a pre-set conversion rule to generate said pre-format signals.

13. The apparatus for preparing a master disc according to claim 12 further comprising:

address generating means for generating said address data and address conversion area designating means for designating an address data conversion area in accordance with said pre-set conversion rule;

said pre-format signal generating means including

address comparator means for comparing address data generated by said address generating means and address data of an area specified by said address conversion area designating means; and

address conversion means for converting the address data generated by said address generating means, in accordance with said pre-set conversion rule, based on the results of comparison by said address comparator means.

14. The apparatus for preparing a master disc according to claim 13

wherein

if, as a result of comparison by said address comparator means, the address data generated by said address generating means is verified to be contained in the area specified by said address conversion area designating means, said address conversion means converts the address data generated by said address generating means in accordance with said pre-set conversion rule.

15. The apparatus for preparing a master disc according to claim 12 further comprising:

address conversion area designating means for specifying an address data conversion area based on said pre-set conversion rule, said recording means recording the information specifying an area specified by said address conversion area designating means as said preformat signals on the master disc.

16. The apparatus for preparing a master disc according to claim 12

wherein

said pre-set conversion rule is to record said address data in the decrementing order.

17. The apparatus for preparing a master disc according to claim 12

wherein

said pre-set conversion rule is that, if the entire address data to be converted among the pre-recorded address data are expressed with the same number of bits, the information of bits corresponding to the same bits of the address data to be converted is rewritten and recorded on said master disc.

18. The apparatus for preparing a master disc according to claim 12

wherein

said pre-set conversion rule is to record said address data on conversion using the pre-set key information.

19. The apparatus for preparing a master disc according to claim 18

wherein

said pre-set key information is recorded on said master disc.

20. The apparatus for preparing a master disc according to claim 12

wherein

at least one of the control information indispensable for reproduction of said digital data, copyright information and the information for decrypting the encrypted digital data is recorded in an area in which said address data is converted in accordance with said pre-set conversion rule.

21. The apparatus for preparing a master disc according to claim 12

wherein

said pre-format signal generating means records said address data as pre-pits on said master disc.

22. The apparatus for preparing a master disc according to claim 12

wherein

said pre-format signal generating means records said address data as embossed marks on said master disc.

23. The apparatus for preparing a master disc according to claim 12

wherein

said pre-format signal generating means records said address data by wobbling a groove formed on said master disc.

24. A method for preparing a master disc used for preparing a recording medium on which digital data has been recorded in synchronism with pre-recorded address data, said method comprising:

converting at least a portion of said address data based on a pre-set conversion rule;

generating pre-format signals for recording on said master disc, said pre-format signals containing said address data; and

recording the generated pre-format signals on said master disc.

25. The method for preparing a master disc according to claim 24 further comprising:

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generating said address data and designating an area for conversion of said address data based on said pre-set conversion rule; and

comparing the generated address data with the address data of said specified area and converting the generated addresses based on the results of comparison in accordance with said pre-set conversion rule.

26. The method for preparing a master disc according to claim 25

wherein

if, as a result of comparison of the generated address and said specified area, it is verified that the generated address data is comprised within said specified area, said generated address data is converted in accordance with said pre-set conversion rule.

27. The method for preparing a master disc according to claim 24

wherein

the information indicating the area for conversion of said address data based on said pre-set conversion rule is recorded as said pre-format signals on said master disc.

28. The method for preparing a master disc according to claim 24

wherein

said pre-set conversion rule is to record said address data in the decrementing order.

29. The method for preparing a master disc according to claim 24

wherein

said pre-set conversion rule is that, if the entire address data to be converted

among the pre-recorded address data are expressed with the same number of bits, the information of bits corresponding to the same bits of the address data to be converted is rewritten and recorded.

30. The method for preparing a master disc according to claim 24

wherein

said pre-set conversion rule is to record said address data on conversion using the pre-set key information.

31. The method for preparing a master disc according to claim 30

wherein

said pre-set key information is recorded on said master disc.

32. The method for preparing a master disc according to claim 24

wherein

at least one of the control information indispensable for reproduction of said digital data, copyright information and the information for decrypting the encrypted digital data is recorded in an area in which said address data is converted in accordance with said pre-set conversion rule.

33. The method for preparing a master disc according to claim 24

wherein

said pre-format signal generating means records said address data as pre-pits on said master disc.

34. The method for preparing a master disc according to claim 24



wherein

said pre-format signal generating means records said address data as embossed marks on said master disc.

35. The apparatus for preparing a master disc according to claim 24

wherein

said pre-format signal generating means records said address data by wobbling a groove formed on said master disc.

36. An apparatus for recording digital data on a recording medium in synchronism with pre-recorded address data, said apparatus comprising:

recording signal generating means for generating recording signals to be recorded on said recording medium;

said recording signal generating means detecting an area in said recording medium where at least a portion of said address data is recorded on conversion in accordance with a pre-set conversion rule; said recording signal generating means decoding the converted address data pre-recorded in said area to generate said recording signals in accordance with the decoded address data.

37. The recording apparatus according to claim 36 further comprising:

data generating means for generating said digital data;

said recording signal generating means including

address reproducing means for reproducing said address data from a signal read out from said recording medium;

address conversion area readout means for detecting and reading out an area of said recording medium where there is recorded the address data converted from the signals read out from the recording medium in accordance with said pre-set conversion rule;

address decoding means for decoding address data reproduced by said address reproducing means; and

address comparator means for comparing the address data of digital data generated by said data generating means to address data decoded by said address decoding means.

38. The recording apparatus according to claim 37 wherein

if the address data reproduced by said address reproducing means is derived from the area of said recording medium where the address data is recorded on conversion based on said pre-set conversion rule, said address decoding means decoding the address data reproduced by said address reproducing means in accordance with the pre-set conversion rule.

39. The recording apparatus according to claim 37 wherein

if, as a result of comparison by said address comparator means, the address data of digital data generated by said data generating means is verified to correspond to address data decoded by said address decoding means, said recording signal generating means generates said recording signal.

40. The recording apparatus according to claim 36

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wherein

said pre-set conversion rule is to record said address data in the decrementing order.

41.. The recording apparatus according to claim 36

wherein

said pre-set conversion rule is that, if the entire address data to be converted among the pre-recorded address data are expressed with the same number of bits, the information of bits corresponding to the same bits of the address data to be converted is rewritten and recorded on said master disc.

42. The recording apparatus according to claim 36

wherein

said pre-set conversion rule is to pre-record said address data on conversion using the pre-set key information.

43. The recording apparatus according to claim 42

wherein

said pre-set key information is recorded on said master disc.

44. The recording apparatus according to claim 36

wherein

at least one of the control information indispensable for reproduction of said digital data, copyright information and the information for decrypting the encrypted digital data is recorded in an area in which said address data is converted in accordance

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with said pre-set conversion rule.

45. The recording apparatus according to claim 36

wherein

said address data are recorded as pre-pits on said master disc.

46. The recording apparatus according to claim 36

wherein

said address data are recorded as embossed marks on said master disc.

47. The recording apparatus according to claim 39

wherein

said address data are pre-recorded by wobbling a groove formed on said master disc.

48. The recording apparatus according to claim 36

wherein

said recording signal generating means 8-16 modulates said digital data and encodes the modulated data by a product code.

49. A method for recording digital data on a recording medium in synchronism with pre-recorded address data, said method comprising:

detecting an area of said recording medium where at least a portion of said address data is recorded on conversion in accordance with a pre-set conversion rule;

decoding the converted address data pre-recorded in said area; and

generating recording signals to be recorded on said recording medium in

accordance with decoded address data.

50. The recording method according to claim 49 comprising:

generating said digital data, reproducing said address data from a signal read out from said recording medium, detecting and reading out the area of said recording medium where said address data converted in accordance with said pre-set conversion rule are recorded, decoding the reproduced address data and comparing the address data of the generated digital data to the decoded address data.

51. The recording method according to claim 50 wherein, if the reproduced address data is from the area of said recording medium where the address data is recorded on conversion in accordance with said pre-set conversion rule, the reproduced address data is decoded in accordance with said pre-set conversion rule.

52. The recording method according to claim 50 wherein

if, as a result of comparison, the generated address data is verified to correspond to decoded address data, said recording signal is generated.

53. The recording method according to claim 49

wherein

said pre-set conversion rule is to record said address data in the decrementing order.

54. The recording method according to claim 49

wherein

said pre-set conversion rule is that, if the entire address data to be converted

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among the pre-recorded address data are expressed with the same number of bits, the information of bits corresponding to the same bits of the address data to be converted is rewritten and recorded on said recording medium.

55. The recording method according to claim 49

wherein

said pre-set conversion rule is to pre-record said address data on said recording medium on conversion using the pre-set key information.

56. The recording method according to claim 55

wherein

said pre-set key information is recorded on said recording medium.

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57. The recording method according to claim 49

wherein

at least one of the control information indispensable for reproduction of said digital data, copyright information and the information for decrypting the encrypted digital data is recorded in an area in which said address data is recorded on conversion in accordance with said pre-set conversion rule.

58. The recording method according to claim 49

wherein

said address data are recorded as pre-pits on said recording medium.

59. The recording method according to claim 49

wherein

said address data are recorded as embossed marks on said recording medium.

60. The recording method according to claim 49

wherein

said address data are pre-recorded by wobbling a groove formed on said recording medium.

61. The recording method according to claim 49

wherein

said digital data is recorded on said recording medium on 8-16 modulation and encoding by a product code.

62. A disc-shaped recording medium comprising:

a first area in which data is to be recorded; and

a second area in which is recorded the information at least including the control information required for reproducing data recorded in said first area;

wherein

address data are pre-recorded in said first and second areas; at least a portion of the address data of said second area is converted in accordance with a pre-set conversion rule.

63. The disc-shaped recording medium according to claim 62 wherein pre-grooves are previously formed at least in said first area.

64. The disc-shaped recording medium according to claim 62

wherein

said pre-set conversion rule is to record said address data in the decrementing order.

65. The disc-shaped recording medium according to claim 62

wherein

said pre-set conversion rule is that, if the entire address data to be converted among the pre-recorded address data are expressed with the same number of bits, the information of bits corresponding to the same bits of the address data to be converted is rewritten and recorded on said recording medium.

66. The disc-shaped recording medium according to claim 62

wherein

said pre-set conversion rule is to pre-record said address data on said recording medium on conversion using the pre-set key information.

67. The disc-shaped recording medium according to claim 66

wherein

said pre-set key information is recorded on said recording medium.

68. The disc-shaped recording medium according to claim 62

wherein

said second area is provided on an inner rim side of said first area.

69. The disc-shaped recording medium according to claim 68 further comprising:

a lead-in area provided on an inner rim side of said second area and a lead-out area provided on an outer rim area of said first area.



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70. The disc-shaped recording medium according to claim 62 as a recordable optical disc.

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